

FORM PTO-1390

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371**

43890-495

U.S. APPLIC. NO. (if known, see 37 CFR 1.5)

09/787756

INTERNATIONAL APPLICATION NO.

INTERNATIONAL FILING DATE

PRIORITY DATE CLAIMED

PCT/JP00/05492

August 17, 2000

August 19, 1999

TITLE OF INVENTION

DISK LOADING APPARATUS

APPLICANT(S) FOR DO/EO/US

Hidehiko OTA

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
- ☐ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau
 - c. ☐ have not been made; however, the time limit for making such amendment has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4))
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information.

International Search Report prepared by JPO
Forms PCT/IB/301 and PCT/IB/304



20277

PATENT TRADEMARK OFFICE

U.S. APPLIC. NO. (if known, see 37 CFR 1.50) <div style="font-size: 1.5em; font-weight: bold;">09/787756</div>		INTERNATIONAL APPLICATION NO. PCT/JP00/05492		ATTORNEY'S DOCKET NUMBER 43890-495	
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				CALCULATIONS	PTO USE ONLY
17. <input checked="" type="checkbox"/> The following fees are submitted. <div style="margin-left: 20px;"> Basic National Fee (37 CFR 1.492(a)(1)-(5)): Search Report has been prepared by the EPO or JPO \$860.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) \$690.00 No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) \$710.00 Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$1,000.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) \$100.00 </div> <div style="text-align: right; margin-top: 10px;"> ENTER APPROPRIATE BASIC FEE AMOUNT = </div>					
Surcharge of \$130.00 for furnishing the oath or declaration later than <input checked="" type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$ 130.00	
Claims	Number Filed	Number Extra	Rate		
Total Claims	7 -20 =	0	x \$18.00	\$	
Independent Claims	1 -3 =	0	x \$80.00	\$	
Multiple dependent claim(s) (if applicable)			+ \$270.00	\$	
TOTAL OF ABOVE CALCULATIONS =				\$ 990.00	
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).				\$	
SUBTOTAL =				\$ 990.00	
Processing fee of \$130.00 for furnishing the English translation later than the <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$	
TOTAL NATIONAL FEE =				\$ 990.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				\$	
TOTAL FEES ENCLOSED =				\$ 990.00	
				Amount to be: refunded	\$
				charged	\$

a. ☐ A check in the amount of \$ _____ to cover the above fees is enclosed.

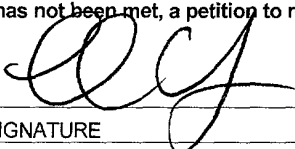
b. ☒ Please charge my Deposit Account No. 500417 in the amount of \$ 990.00 to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 500417. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

McDERMOTT, WILL & EMERY
 600 13th Street, N.W.
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SIGNATURE

Michael E. Fogarty

NAME

36,139

REGISTRATION NUMBER

March 22, 2001

DATE

09/787756

JC03 Rec'd/PCT/PTO 22 MAR 2001

Docket No.: 43890-495

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of :
Hidehiko OTA :
Serial No.: : Group Art Unit:
Filed: March 22, 2001 : Examiner:
For: DISK LOADING APPARATUS :

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, DC 20231

Sir:

Prior to examination of the above-referenced application, please amend the application as follows:

IN THE CLAIMS:

Claim 3, lines 1-3, please change "The disk loading apparatus according to claim 1 or 2, wherein the disks are stopped ejecting when the center holes of the disks out of said disk loading apparatus." to --The disk loading apparatus according to claim 1, wherein the disks are stopped ejecting when the center holes of the disks out of said disk loading apparatus.--

Please insert the following claim:

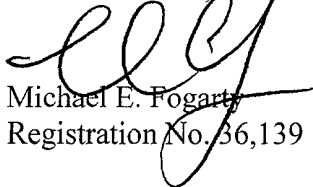
--7. The disk loading apparatus according to claim 2, wherein the disks are stopped ejecting when the center holes of the disks out of said disk loading apparatus.--

REMARKS

The above-referenced application is amended to delete the multiple dependency of claim 3 to avoid the multiple dependent claim filing fee and to insert an additional dependent claim corresponding to the cancelled claim.

Respectfully submitted,

MCDERMOTT, WILL & EMERY



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PCT/JP00/05492

SPECIFICATION

Disk Loading Apparatus

5

TECHNICAL FIELD

The present invention relates to a disk loading apparatus for a recording/reproducing apparatus using a disk-shaped recording medium (it is hereinafter called a disk) such as a compact disk (CD).

BACKGROUND ART

Conventional disk loading apparatuses are shown in Fig. 2 and Fig. 3. In the apparatuses, large-diameter disk 1, small-diameter disk 2, disk-driving roller 3, disk-pass detecting switch 4 for detecting for the end of the disk to pass over, and apparatus body 5 are illustrated. When the disk is ejected, disk-pass detecting switch 4 detects that the disk has passed. The disk then stops at a position shown in Fig. 2.

Even if each of large-diameter (12cm) disk 1 or small-diameter (8cm) disk 2 is used, the disk stops with a same mechanism regardless of the diameters. As shown in Fig. 2, if large-diameter disk 1 stopped and is securely held at a position where the disk can be pulled out with a user's finger inserted into a center hole, a projecting portion of small-diameter disk 2 is so small that the center hole of small-diameter disk 2 cannot move out of apparatus body 5. Therefore, a recording area of small-diameter disk 2 is grabbed with the finger. While, as shown in Fig. 3, if the center hole of small-diameter disk 2 lies off apparatus body 5 to be pulled out, a projecting portion of large-diameter disk 1 becomes excessively so large that the disk cannot be held stably in the projecting state.

DISCLOSURE OF THE INVENTION

It is an object of the present invention to eject large and small disks from an apparatus body at substantially equal projecting rates using one common disk-pass
5 detecting switch, so as to prevent a disk surface from getting soiled or damaged.

A disk loading apparatus of the present invention, in response to a size discrimination result of the used disks of different diameters, controls rotation time of a roller after the detection of the pass of each ejected disk's last end to control the ejected amounts of the disks.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a top view of a main part of a disk loading apparatus in accordance with an exemplary embodiment of the present invention.

Fig. 2 is a top view of a main part of a conventional disk loading apparatus.

Fig. 3 is a top view of a main part of another conventional disk loading
15 apparatus.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Fig. 1 shows a disk loading apparatus in accordance with an embodiment of
20 the present invention. The same elements used in Fig. 2 are denoted with the same reference numerals. Fig. 1 illustrates position 6 where that small-diameter disk 2 has passed is detected during ejected, and position 7 where small-diameter disk 2 is set on a turntable (not shown). When large-diameter disk 1 is ejected from the apparatus, roller 3 is stopped just after disk-pass detecting switch 4 detects that
25 large-diameter disk 1 has passed. Then the disk is stopped and held with its center hole projecting from apparatus body 5. When small-diameter disk 2 is ejected, roller 3 is not immediately stopped after the passing is detected but is driven for a

certain time. After small-diameter disk 2 is ejected by distance A, roller 3 is stopped driving. Therefore, small-diameter disk 2 is also held with its center hole projecting from apparatus body 5 as similarly to large-diameter disk 1. As a result, a user can insert his/her fingertips into the center hole to pull out small-diameter disk 2. Distance A is determined depending upon an installation position of disk-pass detecting switch. Time T by which roller 3 is delayed to stop is calculated by $T=A/V$, where velocity V is a disk ejecting velocity of roller 3. Time T may be stored in a memory for use.

a size of the disk is discriminated based on the following factor:

- 1) A period from a time when the disk starts passing over disk-pass detecting switch 4 to a time when the disk has been pulled in;
- 2) A period from the start of ejecting the disk to a time when disk-pass detecting switch 4 is operated;
- 3) A period during the disk rotates at a predetermined speed from starting to rotate on a turntable; or
- 4) A fact that small-diameter disk 2 passes over disk-pass detecting switch 4 at position 7 from position 6 where disk 2 start to pass, but large-diameter disk 1 does not pass over it.

INDUSTRIAL APPLICABILITY

A disk loading apparatus for a recording/reproducing apparatus using a disk-like recording medium such as a CD stops the disk with its center hole projecting from an apparatus body when ejecting it even if each of disks of different diameters are used. Accordingly, soil, damage, fall, and unstable holding of the disks are prevented. The size of the disk can be discriminated with using only one disk-pass detecting switch, so that a structure of the loading apparatus can be simplified.

CLAIMS

1. A disk loading apparatus comprising:

a roller for pulling in and ejecting a disk;

5 a disk-pass detecting switch for detecting a pass of the disk when the disk is ejected;

disk discriminating means for discriminating a size of the disk; and

10 a controller for controlling, in responsive to a discrimination result by said disk discriminating means, an operation time of said roller after the pass of the disk during ejected is detected.

2. The disk loading apparatus according to claim 1, wherein disks having center holes of various sizes are ejected out of said disk loading apparatus by substantially same distances.

15 3. The disk loading apparatus according to claim 1 or 2, wherein the disks are stopped ejecting when the center holes of the disks out of said disk loading apparatus.

20 4. The disk loading apparatus according to claim 1, wherein said disk-pass detecting switch is also used for discriminating the size of the disk.

25 5. The disk loading apparatus according to claim 4, wherein the size of the disk is discriminated based on a period from a time when the disk starts passing over said disk-pass detecting switch to a time when the disk is pulled in.

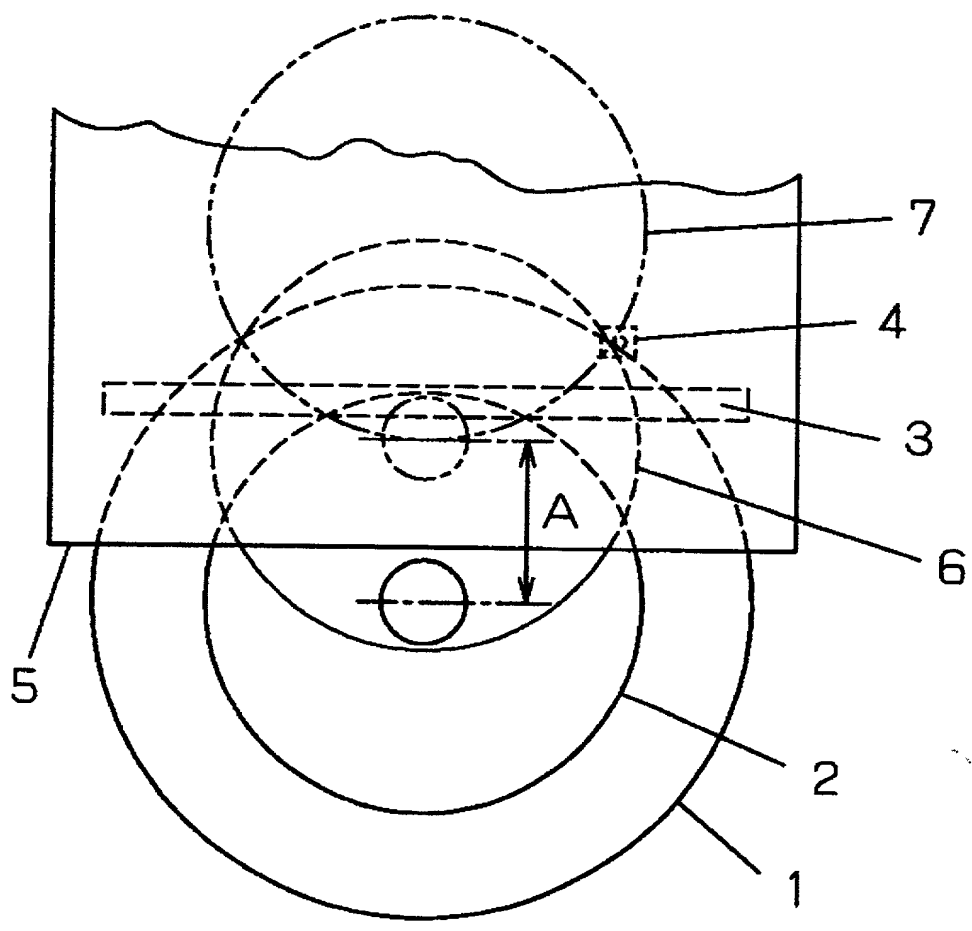
6. The disk loading apparatus according to claim 4, wherein the size of the

disk is discriminated based on a period from a time when the disk starts to be ejected to a time when said disk-pass detecting switch detects a pass of the disk.

ABSTRACT

A disk loading apparatus is provided which stops disks, even if the disks have different diameters, when disk center holes have been ejected to the substantially same positions out of an apparatus body during the ejection. The disks can be pulled out without soiling a recording surface of the disk. One disk-pass detecting switch detects a pass of the last end of each disk and discriminates sizes of the disks. In addition, a rotation time of a roller after the detection of the pass is controlled depending on disk diameters.

Fig. 1



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Fig. 2

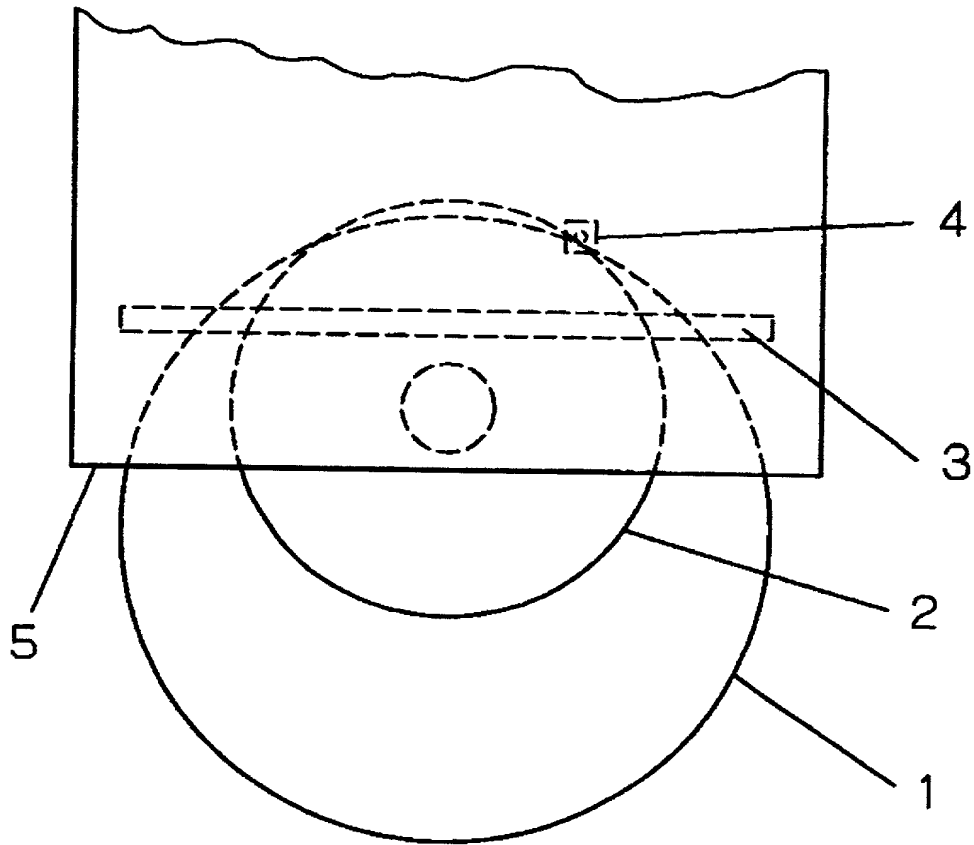
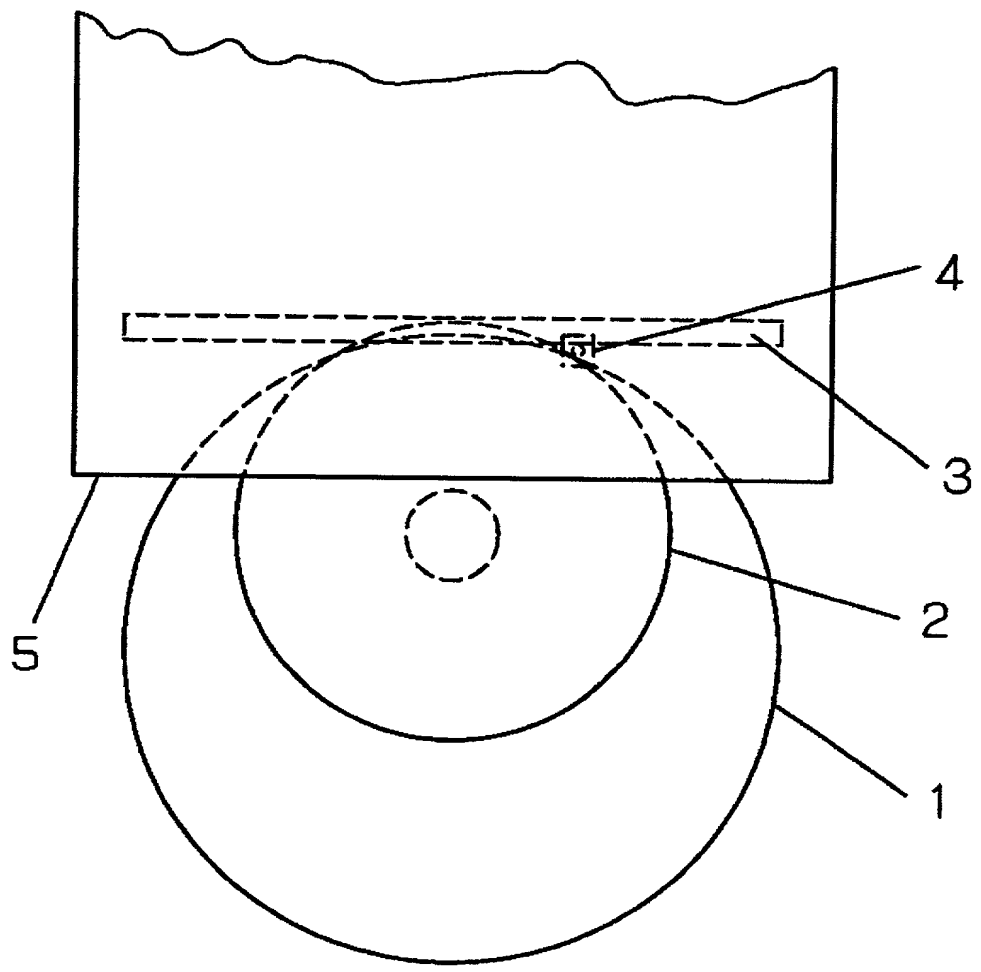


Fig. 3



09/787756-03201

(Includes Reference to PCT International Application(s))

43890-495

As below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

DISK LOADING APPARATUS

the specification of which:



is attached hereto.



was filed as United States application Serial No.

09/787,756

on March 22, 2001

and was amended on

March 22, 2001

(if applicable).



was filed as PCT international application Number

PCT/JP00/05492

on August 17, 2000

and was amended under PCT Article 19 on

(if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is known to me to be material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) or Section 365(b) of any foreign and/or international application(s) for patent or inventor's certificate or Section 365(a) of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

COUNTRY (If PCT, indicate "PCT")	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 USC 119
JAPAN	11-232932	August 19, 1999	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

I hereby claim the benefit under 35 USC §119(e) of any United States provisional application(s) listed below.

PRIOR PROVISIONAL APPLICATION(S):

Application Number	Filing Date

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s), or §365(c) of any PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56 which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application.

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. 120:

U.S. APPLICATIONS		STATUS (Check One)		
U.S. Application Number	U.S. Filing Date	Patented	Pending	Abandoned
PCT APPLICATIONS DESIGNATING THE U.S.				
PCT Application No.	PCT Filing Date	U.S. Serial Numbers Assigned (If any)		
PCT/JP00/05492	August 17, 2000			

POWER OF ATTORNEY: As named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Stephen A. Becker, Reg. No. 26,527; John G. Bisbikis, Reg. No. 37,095; Christopher D. Bright, Reg. No. 46,578; Daniel Bucca, Reg. No. 42,368; Kenneth L. Cage, Reg. No. 26,151; Jennifer Chen, Reg. No. 42,404; Bernard P. Codd, Reg. No. 46,429; Thomas A. Corrado, Reg. No. 42,439; Lawrence T. Cullen, Reg. No. 44,489; Paul Devinsky, Reg. No. 28,553; Margaret M. Duncan, Reg. No. 30,879; Shamita De. Etienne-Cummings, Reg. No. 46,072; Ramyar M. Farid, Reg. No. 46,692; Brian E. Ferguson, Reg. No. 36,804; Michael E. Fogarty, Reg. No. 36,139; John R. Fuisz, Reg. No. 37,327; Willem F. Gadiano, Reg. No. 37,136; Keith E. George, Reg. No. 34,111; Matthew V. Grumbling, Reg. No. 44,427; John A. Hankins, Reg. No. 32,029; Joseph Hyosuk Kim, Reg. No. 41,425; Eric J. Kraus, Reg. No. 36,190; Catherine Krupka, Reg. No. 46,227; Jack O. Lever, Reg. No. 28,149; Raphael V. Lupo, Reg. No. 28,363; Michael A. Messina, Reg. No. 33,424; Dawn L. Palmer, Reg. No. 41,238; Joseph H. Paquin, Jr., Reg. No. 31,647; Scott D. Paul, Reg. No. 42,984; William D. Pegg, Reg. No. 42,988; Robert L. Price, Reg. No. 22,685; Gene Z. Robinson, Reg. No. 33,351; Joy-Ann G. Serauskas, Reg. No. 27,952; Daniel H. Sherr, Reg. No. 46,425; David A. Spenard, Reg. No. 37,448; Arthur J. Steiner, Reg. No. 26,406; David L. Stewart, Reg. No. 37,578; Wesley Strickland, Reg. No. 44,363; Michael D. Switzer, Reg. No. 39,562; Daniel S. Trainor, Reg. No. 43,959; Cameron K. Weiffenbach, Reg. No. 44,488; Aaron Weisstuch, Reg. No. 41,557; Edward J. Wise, Reg. No. 34,523; Jeffrey A. Weller, Reg. No. 48,041; Alexander V. Yampolsky, Reg. No. 36,324; and Robert W. Zelnick, Reg. No. 36,976, all of McDermott, Will & Emery.

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	Post Office Address	Post Office Address 155-2, Sitsukawa, Shigenobu-cho, Onsen-gun	City Ehime	State & Zip Code/Country 791-0204 Japan
202	Full Name of Inventor	Family Name	First Given Name	Second Given Name
	Residence and Citizenship	City	State or Foreign Country	Country of Citizenship
	Post Office Address	Post Office Address	City	State & Zip Code/Country
203	Full Name of Inventor	Family Name	First Given Name	Second Given Name
	Residence and Citizenship	City	State or Foreign Country	Country of Citizenship
	Post Office Address	Post Office Address	City	State & Zip Code/Country

I hereby declare that all statement made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature of Inventor 201:

Hidehiko Ota

Signature of Inventor 202:

Signature of Inventor 203:

Date

May 17, 2001

Date

Date